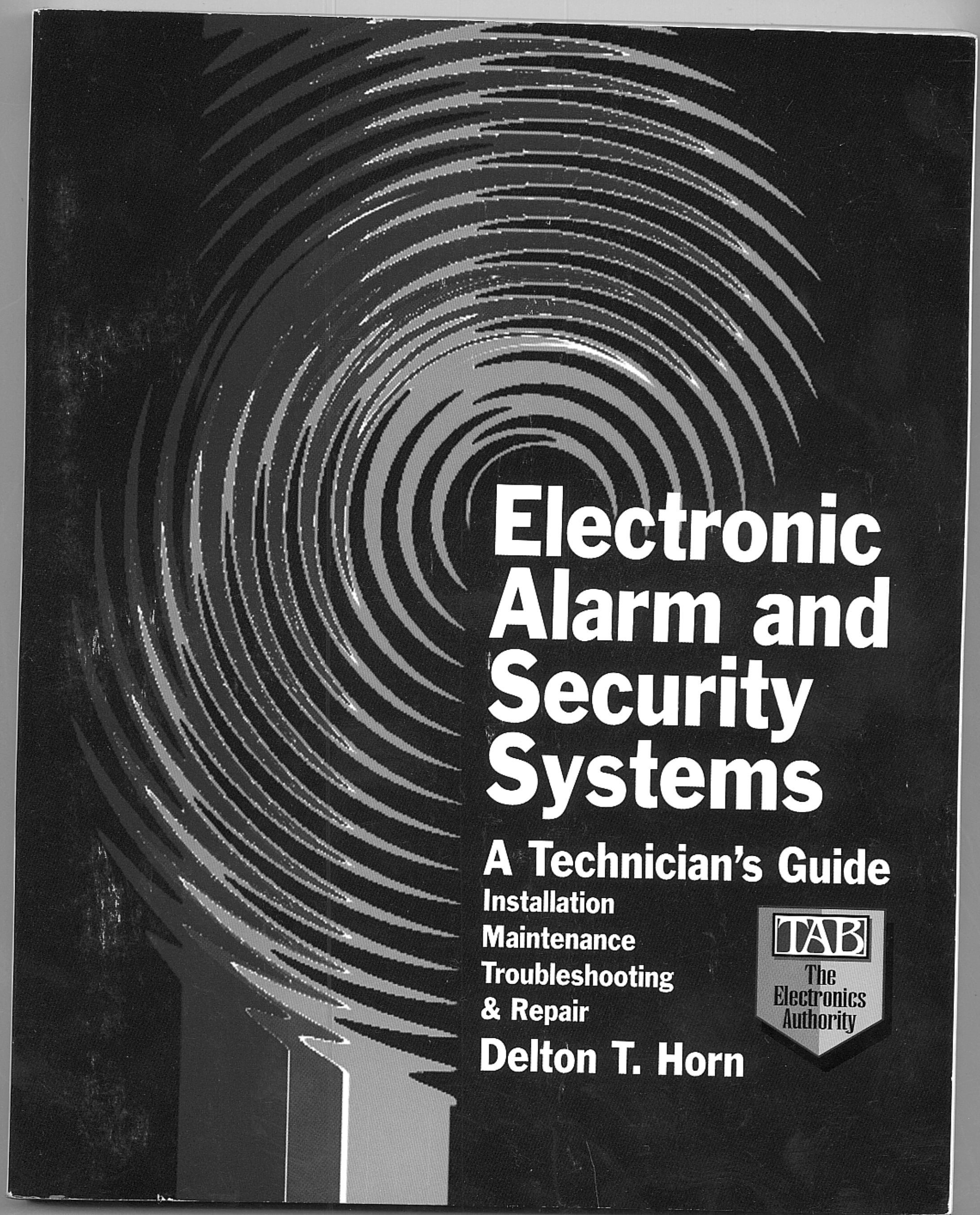
Electronic
Alarm and
Security
Systems
A Technician's Guide
Installation
Maintenance
Troubleshooting
& Repair
Delton T. Horn
TAB
The Electronics Authority

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Introduction

Crime is unfortunately a significant factor in modern life, making security a major concern. There is a big market for security and alarm systems. Except for the simplest (and less effective) systems, someone must install the alarm system, which usually involves some degree of customized design. The regrettable need for alarm systems creates an excellent opportunity for reliable, trustworthy electronics technicians with good mechanical skills and attention to detail.

This book covers the basic principles of designing, installing, and maintaining home alarm systems to suit virtually any circumstances and special needs. This book is not a book of specific circuits but a set of guidelines for using almost any security circuits you might encounter. Security circuits are available from many sources these days. Professional alarm system installers often contract with a particular manufacturer who will provide the necessary circuits, but the installer must put the circuits together into the most effective and functional system possible.

The emphasis in this book is on home security systems, simply because home systems are the most likely markets for the average technician's skills. Commercial alarm systems for stores, warehouses, or factories will almost always be installed by well-established companies with long and impressive track records. The only way for someone new to this field to obtain such a track record is to start small with home systems, and possibly a few small business installations.

Another advantage to the home market is there are a lot more potential home customers than large commercial customers. A home alarm system will almost always be a smaller job than a commercial installation, so you can take on more assignments in a given time and have fewer assets tied up in your supply inventory, equipment, and payroll for assistants.

This business is an ideal one for starting small (as few as two people can handle most standard home installations), yet it is excellent potential for growth, if you do good work reliably and are able to build and maintain your customers' trust in you. Trust is a vital element in the security field.

The first chapter might be a review for many readers, though some readers might be more unfamiliar with the area. This chapter briefly explains the basic prin-

ciples of any alarm system and discusses most common types of sensors used in such systems.

Chapter 2 discusses some issues that you need to consider in the very important preplanning stage. Planning for these issues can save a lot of time and money in any alarm system. By considering and solving potential problems ahead of time, you can design and install a more effective, more reliable, and less expensive system. The system will suit the specific requirements of the home to be protected and can be completed faster if you plan ahead.

It is often forgotten that the home (or other building to be protected) is itself a major part of the security system. Chapter 3 examines some ways the design and structural details of the home can interact with an alarm system, providing strengths and special weaknesses that require extra protection.

Chapter 4 covers the installation procedures of an alarm system in the home. The chapter includes special attention to techniques for heading off problems before they ever get a chance to occur. In addition to covering the main installation, this chapter also considers important finishing touches. It also deals with the most important yet frequently forgotten element of any home security system: your customers, the legitimate residents of the protected home.

Chapters 5, 6, and 7 help you broaden the usefulness of a security system by covering fire, gas, and flooding hazards with your security system.

Any system requires some degree of maintenance to continue operating reliably and at peak performance. Although most home alarm systems require very little active maintenance, you shouldn't ignore the issue completely. Some tips on regular maintenance of a home alarm system are covered in Chapter 8.

Sooner or later any system can be expected to develop problems and fail partially or completely to fulfill its intended operation. Alarm systems designers will be called back to repair systems they have installed—and sometimes systems installed by others as well. Troubleshooting and repairing home alarm systems are the subjects of Chapter 9. Troubleshooting any but the simplest alarm systems can be difficult and tedious without a well thought-out plan of attack. This chapter will demonstrate how to eliminate many of the possibilities quickly before you even turn on any of your test equipment.

Like everything else these days, there have been a lot of high-tech developments in the security field. Most were designed with protecting industrial complexes, not homes, in mind. The tenth chapter explores what modern electronics can do in alarm systems. Chapter 10 also explores the question of what is or is not appropriate for a home alarm system. Although many gadgets are exciting and fun, often more reliable security can be achieved by keeping the system relatively simple. In some cases, a computer-based alarm system is a good and valuable idea, but often it is simply wasteful and increases the number of things that can go wrong. Rather than foolishly jumping for the latest nifty gadget available, you as a reputable home alarm system installer should discuss the advantages and disadvantages of such enhancements with the customer and consider whether or not they offer any real advantage to meet the customer's needs.

Without dealing with specific circuitry, this book provides an extensive look at all major areas of installing, maintaining, and troubleshooting home alarm systems. The

focus of this book is on the professional alarm system installer, but electronics hobbyists and do-it-yourself homeowners and apartment dwellers will find much of value here as well. The only real difference, after all, is that the do-it-yourself system installer is his or her own customer.

Cash in on the growing demand for home alarm and security systems!

If you're an electronics technician interested in expanding your expertise to include the lucrative and rapidly growing field of intrusion-alarm systems, this is the book for you. It's filled with the information you need to get into this booming market and start installing effective, reliable home alarm systems right away.

Delton T. Horn's well-illustrated instructions guide you every step of the way, from mapping out a cost-efficient design to troubleshooting those "tough dog" problems. Topics include:

- The basic alarm system elements
- The most commonly found types of sensors in today's alarm systems
- Designing central control-box circuits complete with alarm location indicators and emergency bypass systems
- Installing alarms on doors and windows
- Panic buttons
- Using test equipment
- Arming and disarming alarm systems
- Maintenance procedures
- Lighting and landscaping techniques
- Computer-controlled security systems

Practical, real-world examples demonstrate many of the troubleshooting techniques discussed. This comprehensive handbook also includes details on how to install gas detectors and fire, smoke, and flood alarms.

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